

What is claimed is:

1. A laminated photocatalytic pulp paper characterized in that a virgin pulp or a wastepaper pulp is laminated on a photocatalytic pulp composition in which 40-95 wt% of a pulp and/or a paper having the water content of 3 wt% or less, an average fiber diameter of 5-300  $\mu$  m and an average fiber length of 0.1-70 mm are blended with 5-60 wt% of titanium oxide.

2. A laminated photocatalytic pulp paper characterized in that a virgin pulp or a wastepaper pulp is laminated on a photocatalytic pulp composition in which 5-60 wt% of titanium oxide, 40-95 wt% of a pulp and/or a paper having the water content of 3 wt% or less, an average fiber diameter of 5-300  $\mu$  m and an average fiber length of 0.1-70 mm, and 25-100 wt% relative to a total weight of the titanium oxide, the pulp and/or the paper of a thermoplastic resin are blended.

3. A process for producing a laminated photocatalytic pulp paper, which comprises a step of imparting the stirring impact force to a blend obtained by blending 40-95 wt% of a pulp and/or a paper which has been split and disaggregated to an average fiber diameter of 5-300  $\mu$  m and an average fiber length of 0.1-70 mm with 5-60 wt% of titanium oxide to stir and, whereby, the shear exothermic heat is generated by a shearing force based on the stirring impact force and the blend is dried by this shear exothermic heat to reduce the water content to 3 wt% or less, a step of swelling the pulp and/or the paper upon the drying to obtain a three-dimensionally entangled material, a treatment step of pushing the titanium oxide against the fiber surface of the pulp and/or the paper by the stirring impact force to fix thereto, and a step of laminating a virgin pulp or a wastepaper pulp after the treatment step of pushing and fixing the titanium oxide.

4. A process for producing a laminated photocatalytic pulp paper, which comprises a step of imparting the stirring impact force to a blend in which 5-60 wt% of titanium oxide, 40-95 wt% of a pulp and/or a paper having the water content of 3 wt% or less, an average fiber diameter of 5-300  $\mu$  m and an average fiber length of 0.1-70 mm, and 25-100 wt% relative to a total weight of the titanium oxide, the pulp and/or the paper of a thermoplastic resin are blended and, whereby, the shear exothermic heat is generated

by a shearing force based on the stirring impact force and the blend is dried by this shear exothermic heat to reduce the water content to 3 wt% or less, a step of swelling the pulp and/or the paper upon the drying to obtain a three-dimensionally entangled material, a treatment step of pushing the titanium oxide and the thermoplastic resin against the fiber surface of the pulp and/or the paper by the stirring impact force to fix thereto, a step of pushing titanium oxide against the fiber surface of the pulp and/or the paper to fix thereto, and a step of laminating a virgin pulp or a wastepaper pulp after the treatment step of pushing and fixing the titanium oxide.

5. The process for preparing a laminated photocatalytic pulp paper according to claim 3, wherein a virgin pulp or a wastepaper pulp is paper making-laminated in a paper making step after the treatment step of pushing and fixing the titanium oxide.

6. The laminated photocatalytic pulp paper according to claim 1, or the process for preparing a laminated photocatalytic pulp paper according to claim 3, wherein the wastepaper pulp comprises a newspaper wastepaper via a DIP step.

7. The laminated photocatalytic pulp paper according to 1, wherein the wastepaper pulp comprises a newspaper wastepaper and lamination is performed using the wastepaper pulp as a core material or a substrate.

8. The laminated photocatalytic pulp paper according to claim 1, wherein a synthetic fiber having an average fiber length of 1-100 mm, an average diameter of 10-40  $\mu$  m and a melting point of 120 °C or higher is blended with 5-60 wt% of titanium oxide and 40-95 wt% of a pulp and/or a paper, at a maximum ratio of 1:9.

9. The process for preparing a laminated photocatalytic pulp paper according to claim 3, wherein the pulp is a paperboard-like dry pulp and the dry pulp is used as a subject to be treated and which further comprises a splitting and disaggregating step of imparting an impact grinding force to individual small sections to be treated formed by chopping the dry pulp into a plurality of small sections to be treated, into ground and aggregated cotton-like fibrous pulp fibers having approximately the same length as that of a raw pulp and having no fuzz produced by the grinding.

10. A splitting and disaggregating apparatus for use in the process for preparing a

laminated photocatalytic pulp paper as defined in claim 9, which comprises a fixed side impact grinding means in which a port for supplying a plurality of chopped small sections to be treated is past in the center of a fixed disc and respective fixing pins are successively provided on a plurality of rotating loci, a mobile side impact grinding means in which a mobile disc is rotatably and drivably provided opposite to the fixed and a plurality of mobile pins different from the respective fixing pins are successively provided on a rotating loci on the mobile disc, and a take-out means for taking out fibrous small sections to be treated which have been ground and aggregated into cotton-like fibers through an outlet.

11. A paper string which comprises a twisted laminated photocatalytic pulp paper, wherein said laminated photocatalytic pulp paper is obtained by laminating a virgin pulp or a wastepaper pulp on a photocatalytic pulp composition in which 40-95 wt% of a pulp and/or a paper having the water content of 3 wt% or less, an average fiber diameter of 5-300  $\mu$  m and an average fiber length of 0.1-70 mm are blended with 5-60 wt% of titanium oxide, and cutting the resulting laminate to an arbitrary width.

12. A process for preparing the paper string comprising a photocatalytic paper as defined in claim 11, which comprises cutting the aforementioned laminated photocatalytic pulp paper to a width of 5-50 mm, winding it in a roll-manner, and twisting the roll.

13. A molded article comprising the paper string as defined in claim 1, which comprises a flat string, wherein said flat string is obtained by stacking a plurality of paper strings on the same plane.

14. A molded article comprising the paper string as defined in claim 1, which comprises a woven fabric comprising the paper string as defined in claim 11 as a weft and a natural or chemical fiber as a warp.

15. A molded article comprising the paper string as defined in claim 11, which comprises a combination of any two or three of the molded articles as defined in claims 11.

16. The process for preparing a laminated photocatalytic pulp paper according to

claim 3, wherein the wastepaper pulp comprises a newspaper wastepaper and lamination is performed using the wastepaper pulp as a core material or a substrate.

17. The process for preparing a laminated photocatalytic pulp paper according to claim 3, wherein a synthetic fiber having an average fiber length of 1-100 mm, an average diameter of 10-40  $\mu$  m and a melting point of 120 °C or higher is blended with 5-60 wt% of titanium oxide and 40-95 wt% of a pulp and/or a paper, at a maximum ratio of 1:9.